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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/665,713 | 09/19/2003 | Douglas Duane Coolbaugh | BUR920000142US2(13891A) | 6003 |

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EXAMINER

SEFER, AHMED N

| ART UNIT | PAPER NUMBER |
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2826

DATE MAILED: 04/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,713

Applicant(s)

DUPUIS ET AL

Examiner

A. Sefer

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1-8 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Gris USPN 6,352,907.

Grill discloses (see figs. 1-9, col. 4, lines 37-54 and col. 5, 10-15) a method of reducing the dislocations present in a SiGe heterojunction bipolar transistor, said method comprising the steps of: (a) providing a semiconductor substrate having isolation regions 4 formed therein, said semiconductor substrate having an upper surface; (b) recessing a portion 9 including etching (as in claim 7) of the isolation regions below the upper surface of said semiconductor substrate so as to provide a recessed isolation surface; and (c) forming a SiGe layer 10 on the upper surface of the semiconductor substrate as well as said recessed isolation surface, wherein said recessing controls facet formation at edges of the SiGe layer.

As for claims 2-4, Grill discloses (see col. 2, lines 40-53) isolation regions being trench isolation regions formed by trench filling (as in claim 3) including deposition of SiO₂ (as in claim 4).

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As for claims 5 and 6, Grill discloses a patterned dielectric layer 5-2 composed of a nitride (as in claim 6) formed on a portion of said isolation regions prior to conducting step (b).

As for claim 8, Grill discloses a patterned dielectric 15 formed on a portion region that is not recessed.

As for claim 10, Grill discloses comprising the steps of: (d) forming an insulator 15/11 on said SiGe layer; (e) providing an opening (see fig. 8) in said insulator so as to expose a portion of said SiGe base region; (f) forming an emitter material 12 on said insulator and in said opening so as to contact said SiGe base region; and (g) patterning said emitter material and said insulator so as to form a patterned emitter and a patterned insulator on said SiGe base region.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gris in view of Kamins et al. ("Kamins") USPN 5,633,179.

Gris discloses the method of reducing the dislocations present in a SiGe heterojunction bipolar transistor as recited in the claim, but do not specifically disclose recessing a portion including lithography and etching.

Kamins discloses in figs. 3 and 5 recessing a portion 16/18-22 layers including lithography and etching.

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Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Kamins' with Gris' SiGe heterojunction bipolar transistor since that would provide a proper control of the etch process as taught by Kamins.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gris in view of Heinemann et al. ("Heinemann") (DE 19652423).

Gris discloses (col. 3, lines 44-50) the method of reducing the dislocations present in a SiGe heterojunction bipolar transistor as recited in the claim, but do not specifically disclose said SiGe layer being formed by a deposition process selected from the group consisting of ultra-high vacuum chemical vapor deposition (UHVCVD), molecular beam epitaxy (MBE), rapid thermal chemical vapor deposition (RTCVD) and plasma-enhanced chemical vapor (PECVD).

Heinemann et al disclose (see abstract) a SiGe layer being formed by molecular beam epitaxy (MBE).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Heinemann's with Gris' SiGe heterojunction bipolar transistor since that would reduce the outward diffusion of the SiGe layer as taught by Heinemann.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2800.

ANS

March 24, 2004


NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800